

THE SUPPRESSION OF DISRUPTIVE CLASSROOM BEHAVIOR
WITH THREE DURATIONS OF TIMEOUT

An abstract of a Thesis by
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The problem. Previous research on timeout duration has suggested that short duration timeouts would not be effective when presented following a history of longer duration timeout. This study analyzed the suppressive effects of short duration timeout both prior to and following a longer duration and compared those conditions with a very brief 15 sec timeout.

Procedure. The subjects were four very disruptive, retarded children attending a classroom that met for two sessions per day, five days per week. The observers used an interval recording procedure to record three of the four students' disruptive behaviors and a time sampling procedure to record the fourth child's off-task behavior. Both the rate of edible reinforcers and the rate of teacher instructions given to each child were held constant throughout all phases of the study. A single-subject reversal design was employed and featured one of the three timeout durations (15 sec, 1 min, 5 min) alternating with baselines.

Findings. The finding of similar suppression of disruptive behaviors with all three durations suggests that timeout duration may not be the critical parameter in determining the suppressiveness of timeout. Also, the 15 sec timeout duration provided students a greater availability for classroom instruction than the 5 min duration.

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Chapter 1

INTRODUCTION

A recent review of punishment of human behavior (Johnston, 1972) reported that more of the existing studies used a response contingent timeout event to obtain suppression than any other kind of procedure. Despite its popular use, there is little research evidence that clearly documents those parameters of timeout which are most effective (Bostow & Bailey, 1969; Johnston, 1972; O'Leary & O'Leary, 1972).

The optimal duration which the subject should spend in timeout is one question yet to be answered. The durations of timeout reported have ranged from 3 sec (Tate & Baroff, 1966) to 3 hrs (Burchard & Tyler, 1965). In Bostow and Bailey (1969) a 2 min timeout was used to suppress loud and abusive verbal behavior by an adult institutional resident and attacks on other people and furniture breaking by a 7 year old male institutional resident. A 2 min timeout procedure was also used to suppress physical aggression and yelling by a 4 year old boy living at home (Zeilberger, Sampen, & Sloane, 1968), and toy banging, self-biting, string twirling, and body jerking by two severely retarded 8 and 9 year old students (Pendergrass, 1972). In Clark, Rowbury, Baer, and Baer (1973) a 3 min timeout procedure was used to suppress attacks toward people and materials by an

8 year old Down's Syndrome girl attending a pre-school. A 30 min timeout was used to decelerate the deviant behavior of 20 moderately and severely retarded institutionalized children in White, Nielson, and Johnson (1972). In Burchard and Tyler a 3 hrs timeout was used to suppress the delinquent behavior of a 13 year old institutionalized boy. This large discrepancy over the most effective durations of timeout has posed problems for behavior analysts who must select durations which will be effective but not more restrictive than necessary.

The trend of recent research has been toward the use of shorter durations of timeout (Clark et al., 1973). In applied settings brief durations of timeout are desirable for at least two reasons. First, longer timeout durations remove the subject from the opportunity to learn desirable behaviors for greater periods of time, thus increasing the cost of treatment (Johnston, 1972; White et al., 1972). Second, current ethical and legal trends clearly require the use of the least restrictive alternative necessary to achieve a specific goal (Martin, 1975; Risley, 1975). It has been specifically argued that an ethical question is raised whenever an agency programs "periods of timeout in excess of effective durations" (White et al., 1972, p. 112).

The comparison of different durations of timeout has received little attention in the applied area (Johnston, 1972). Timeout durations of 5 and 30 min were included in

Burchard and Barrera (1972) who reported greater suppression with the 30 min timeout for four of six subjects. However, this result was confounded with the token system manipulation that occurred and possibly by the sequence of presentations which was not specified. In White et al. (1972) a between groups counterbalanced design was used with very low rates of disruptive behavior to compare timeout durations of 1, 15, and 30 min. Their results were less than conclusive in that the 1 min timeout led to a suppression in the mean rate of disruptive behavior when it was presented to the group with no prior history of timeout but resulted in a substantial increase in disruptive behavior when it followed the other durations. One minute timeout was inferior to longer durations in its suppressive effects only when it followed them. The authors concluded that a sequence effect might have been operative. They argued that since the duration could always be increased if the short timeout interval proved ineffective the initial use of very short timeout durations was recommended. However, this recommendation contradicts suggestions from the animal literature on punishment (Azrin & Holz, 1966). Azrin and Holz suggested the initial use of maximally suppressive contingencies followed by less intensive maintenance procedures and specifically stated that the initial use of marginally suppressive procedures may decrease the effectiveness of subsequent more intensive stimuli.

Parametric laboratory analyses of timeout duration have also been inconclusive. When timeout was contingent on pigeons' incorrect responses during a matching-to-sample task, equal suppression was demonstrated with four timeout durations between 10 sec and 2 min but a 1 sec timeout demonstrated less suppression (Ferster & Appel, 1961; Zimmerman & Ferster, 1963). Thomas (1968) found 30 sec and 2 min timeouts to be equally suppressive for three pigeons. Zimmerman and Baydan (1963) manipulated both the schedule of reinforcement and timeout durations in a matching-to-sample task with humans using timeout to punish incorrect responding. Timeout durations of 2, 10, 60, and 120 sec were investigated. They found: (a) under a VI 3 min schedule of reinforcement, a linear relationship between timeout duration and the suppression of incorrect responses with longer durations being more effective, (b) with a CRF schedule of reinforcement, four subjects continued to show the linear relationship described above while all durations of timeout demonstrated equal suppression for the two remaining subjects. In a later study (Miller & Zimmerman, 1966), six college students received 4 and 1 min timeouts for incorrect responses in a matching-to-sample task. Both durations of timeout were equally effective for three subjects while the 4 min timeout was more suppressive for the three remaining subjects.

Undoubtedly other variables than duration also

influence the suppressive effects of timeout. Azrin and Holz (1966) have emphasized the importance of the opportunity to emit other reinforced responses. As noted above, Zimmerman and Baydan (1963) found that a change in the schedule of reinforcement for correct responding affected the suppression of some timeout durations. Applied research has also demonstrated that the combined use of reinforcement and timeout procedures is superior to either procedure in isolation (Wahler, cited in White et al., 1972; Walker, Mattson, & Buckley, 1971). The systematic use of positive reinforcement for desirable behavior is a feature of most programs where timeout is employed (Burchard & Tyler, 1965; Zeilberger et al., 1968). Applied comparisons of timeout durations have failed to control the rate of reinforcement (Burchard & Barrera, 1972; White et al., 1972). In the present study, both the rate of reinforcement and the rate of instructions was held constant across all experimental conditions so that only the duration of timeout was manipulated.

The original purpose of the present study was to partially replicate the sequence effect reported in White et al. (1972) and then investigate a procedure to improve the suppression of short duration timeouts (Tetreault & Brubakken, 1976). Following two unsuccessful attempts to demonstrate a sequence effect the suppression of very short duration timeouts was investigated.

Chapter 2

METHOD

Subjects

Subjects included four students attending a pre-school for children with learning difficulties. Jan was a verbal, 7 year old girl diagnosed hyperkinetic who attended the pre-school in the afternoons and a regular first grade class in the mornings. Tim was a verbal, 11 year old boy diagnosed autistic. He attended a class for the trainable retarded during the morning and the pre-school during the late morning and afternoon. Jim was a non-verbal, 6 year old boy with Down's Syndrome. Pat was a verbal, 7 year old boy, also with Down's Syndrome. Both Pat and Jim attended the pre-school 6 hrs per day. These children had been selected for the experimental classroom by the program director because of their many disruptive behaviors and her judgment that they should learn to adjust to a small classroom setting.

Setting

The pre-school was a privately funded program which relied heavily on volunteer staff to implement treatment programs developed by program consultants and paid staff persons. The experimental class met twice a day, Monday through Friday. The a.m. class session met from 11:30 a.m. to 12:30 p.m. and the p.m. class session met from 3:00-4:00

p.m. Jim and Tim attended both a.m. and p.m. sessions. Pat attended the a.m. session and Jan attended the p.m. session. The class met in one corner area, 10 ft. x 10 ft. (3 m x 3 m), of a large classroom, 22 ft. x 26 ft. (6.7 m x 7.9 m). The students and teacher (experimenter) sat around a table centered in this corner area.

Observation and Reliability

Student behavior. Five disruptive behaviors were recorded. They included: (a) aggression, defined as physical contact between the child and another person, and taking materials from another; (b) temper tantrums, defined as throwing and pushing materials, or rapping materials against the table top; (c) self-hitting, defined as hitting one's self; (d) out of seat, defined as neither of the child's buttocks touching the seat of his/her chair; and (e) off task, defined as looking away from an assigned task and/or out of seat (off task was the only response recorded for Jan and was not recorded for the other children).

Observer and assistant behavior. Besides the teacher, an observer and assistant were present during all sessions. During baseline conditions both the observer and assistant recorded the students' disruptive behaviors. During timeout phases the assistant administered timeouts and kept a record of the number of timeouts each child received while the observer continued to record disruptive

behavior. Both the observer and assistant remained outside of the class area except when the assistant administered timeout. Observers and assistants were assigned to either a.m. class sessions or the p.m. class sessions. Three observers and five assistants served during the investigation.

Data sheets were divided into 20 sec time blocks for each child. During a.m. sessions the observer rotated among the three children so that each child was observed for one 20 sec interval per min. During the p.m. sessions the observer alternated between Tim and Jim every 20 sec so they were each observed for an average of 30 sec per min. Jan was observed for one sec at the end of each 20 sec interval during the p.m. sessions. One or more of four symbols (one for Jan) was recorded whenever a child emitted any of the four disruptive behaviors during his recording interval (time sample for Jan). An "X" was recorded if a child was in timeout during any part of an interval. If neither disruptive behavior nor timeout occurred within the recording interval a horizontal line was drawn through that time block on the data sheet. Occasionally a student spent part of the interval in timeout and the rest in the class area. In this case the observer recorded both a horizontal line and an "X" in the recording block.

The percentage of intervals scored for disruptive behavior was computed by dividing the number of recording

intervals scored for disruptive behavior by the total number of intervals in which disruptive behavior could occur. Since disruptive behavior could not occur when the entire interval was spent in timeout, these intervals were not used in the calculations.

Teacher behavior. The frequency of instructions and reinforcers given to each child were recorded for each class session (a.m. and p.m.) by the teacher. Instructions were those statements made by the teacher to indicate that the student was to interact with his/her work materials (i.e., "Jan put the puzzle together."). The term reinforcer is used to denote the edibles and praise administered to the students by the teacher. There was no independent demonstration of their functional value. The teacher recorded a hash mark on a pre-printed data sheet for each instruction and reinforcer delivered.

Following the initial baseline phase (session 16) the teacher attempted to hold the rate of instructions and reinforcers per session constant for each child. The frequency of instructions and reinforcers remained constant during baseline conditions. However, during the timeout conditions, the teacher adjusted the frequency of each student's instructions and reinforcers according to the time spent in timeout in order to maintain equal rates of instructions and reinforcers across baseline and timeout phases. Based upon the assistant's cumulative total of

timeouts, the teacher estimated the loss of class time due to timeout every 5 min and adjusted the maximum number of reinforcers and instructions each child could receive. This system was developed during the first 1 min timeout phase.

The following calculations were performed to derive the rates of instruction and reinforcement. The number of instructions and reinforcers each child received during a class session was divided by the estimated amount of session time that the child spent in the class area. While time in the classroom remained constant during baseline conditions it varied during timeout phases according to the number and duration of timeouts received. Time in the classroom, in min, was estimated by whichever of the following calculations was appropriate for the session (a.m. or p.m.) or child in question. During the a.m. class sessions each of the students was observed for one 20 sec observation interval per min. Therefore, the number of 20 sec observation intervals not recorded for timeout was the estimate of the number of min each child spent in the class area. During the p.m. class session Jim and Tim were each observed for one and one half 20 sec intervals per min. Therefore, the number of 20 sec observation intervals not recorded for timeout multiplied by .67 was the estimate of the number of min these children spent in the class area. Jan (p.m. class session) was observed for three 20 sec time

samples per min. Therefore, the number of 20 sec time samples during which timeout was not recorded divided by three was the estimate of the number of min Jan spent in the class area.

Experimental Conditions

Baseline. Disruptive behavior was ignored as much as possible during baseline periods. However, hitting or throwing materials at other children or the teacher was stopped in a matter-of-fact manner. Classroom instruction occurred across both baseline and experimental conditions. Noncompliance with teacher instructions was ignored during baseline and experimental phases unless compliance was essential in which case physical prompts were employed. During baseline and experimental periods academic and appropriate classroom behaviors were frequently reinforced with verbal praise and edible treats (raisins, cereal, pretzels, and M & M's). Appropriate classroom behaviors included: sitting in one's chair, hands on the table, compliance with the teacher's instructions and attending to task. Each child had an individualized program designed to accelerate pre-academic and academic skills. These programs remained essentially the same throughout the investigation although the children could progress within all areas. For example, in a color discrimination program, once the child had learned to discriminate between two colors another color was introduced.

Timeout. Manipulations involved timeout durations of 15 sec (.25 min), 1 min, and 5 min. All timeout phases were identical except for the duration of timeout and, in some cases, the number of sessions. During timeout conditions the teacher or the assistant gave a verbal reprimand indicating the disruptive behavior (e.g., "Jan, no throwing.") and placed the child in timeout contingent on each occurrence of disruptive behavior. The child was led 13 ft. (4 m) to the back of the classroom in a neutral manner without comment and seated in a chair facing the wall. If the child refused either to go to the chair or to sit in the chair for the duration of timeout, he/she was then placed in a locked empty room. The time spent in this back-up room was either 1 min or the remaining portion of timeout, whichever was longer, except during the .25 min timeout when the back-up was also .25 min in duration. The back-up rooms were well ventilated and lighted, measured 12 ft. x 12 ft. (3.9 m x 3.9 m), and were located 50 ft. (19.1 m) from the classroom. The door to the back-up room contained a large translucent window. The timeout interval started after the child was seated in the timeout chair, and was timed by the assistant with a stopwatch for each child. At the end of timeout the assistant returned the child to his/her seat in the class area with the instruction to sit (e.g., "Jim, sit in the chair.").

Experimental Design

A single-subject reversal design was employed with each child and featured one of the three timeout durations alternating with baseline except as noted. A three week baseline preceded the first 1 min timeout condition for all children. This 1 min phase was followed by baseline, 5 min timeout, baseline, and 1 min timeout phases. Each of these conditions was in effect for two weeks. The second 1 min phase was immediately followed by a three week .25 min timeout (i.e., without a return to baseline). Subsequently, baseline conditions were imposed for 7 days followed by a reinstatement of the .25 min timeout. The second .25 min timeout was in effect for 12 days for all of the children except Tim who left school 1 week early.

Inter-observer Agreement

Inter-observer agreement on the occurrence and occurrence plus non-occurrence of the five disruptive behaviors was assessed at least once per week during all baseline and timeout phases. During the baseline conditions observers' and assistants' observations were compared. During all baseline and timeout conditions the a.m. session observer also recorded during one p.m. session per week in order that the a.m. and p.m. observers' records could be compared. Inter-observer agreement was calculated by the following formulas: $\text{number of agreements on occurrences} / \text{number of}$

agreements and disagreements on occurrences X 100, and number of agreements on all intervals / number of agreements and disagreements on all intervals X 100. Inter-observer agreement on the frequency of teacher instructions and reinforcement given to each child was also assessed weekly during a.m. and p.m. sessions by an extra assistant and calculated by dividing the smaller number of observations by the larger.

Median inter-observer agreement on the occurrence plus non-occurrence (i.e., agreement on all recording intervals) of each of the five disruptive behaviors throughout the investigation was: Jim 98% (range = 88%-100%), Tim 98% (range = 87%-100%), Pat 97% (range = 84%-100%), Jan 98% (range = 85%-100%). Median agreement on just the occurrence of each of the five behaviors throughout the investigation was: Jim 91% (range = 0%-100%), Tim 96% (range = 0%-100%), Pat 95% (range = 0%-100%), Jan 88% (range = 0%-100%). The low percentages occurred during the timeout conditions when disruptive behaviors occurred infrequently. Inter-observer agreement was less than 80% on 43 of the 219 reliability assessments. The median frequency of disruptive behavior was three (range = 0-23) for these 43 assessments whereas the median number of behaviors scored for those assessments with agreement greater than or equal to 80% was 21 (range = 1-115). Low percentages of inter-observer agreement during periods of infrequent responding have been noted

elsewhere (Johnson & Bolstad, 1973).

Median inter-observer agreement on the frequency of instructions was: Jim 95% (range = 79%-100%), Tim 92% (range = 83%-100%), Pat 94% (range = 56%-100%), Jim 91% (range = 70%-100%). Median agreement on the frequency of reinforcement was: Jim 93% (range = 83%-100%), Tim 95% (range = 80%-100%), Pat 100% (range = 85%-100%), Jan 100% (range = 89%-100%).

Chapter 3

RESULTS

In order to demonstrate that timeout had been consistently administered contingent on disruptive behavior, the percentage of disruptive behaviors followed by timeouts was calculated based on observer records for each 20 sec observation interval. This calculation yielded a percentage of consistent timeout administrations [percentage = (consistent scores / consistent and inconsistent scores) x 100]. Consistent scores were defined as a recording interval on the data sheet containing a symbol for disruptive behavior followed by a symbol for timeout. Inconsistent scores were defined as a recording interval with a disruptive behavior symbol in the absence of a timeout symbol or vice versa. The median percentages of consistent timeout administrations were: Jim 100% (range = 0%-100%), Tim 100% (range = 0%-100%), Pat 100% (range = 0%-100%). The time sampling procedure used to record Jan's off-task behavior did not permit such an analysis. Again, low frequencies of disruptive behavior during timeout phases were responsible for the low consistency percentages.

Figure 1 shows the percentage of observation intervals recorded for disruptive behaviors for each child and each class session during baseline and timeout conditions. Looking first at the top panel, Jim's baseline disruptive

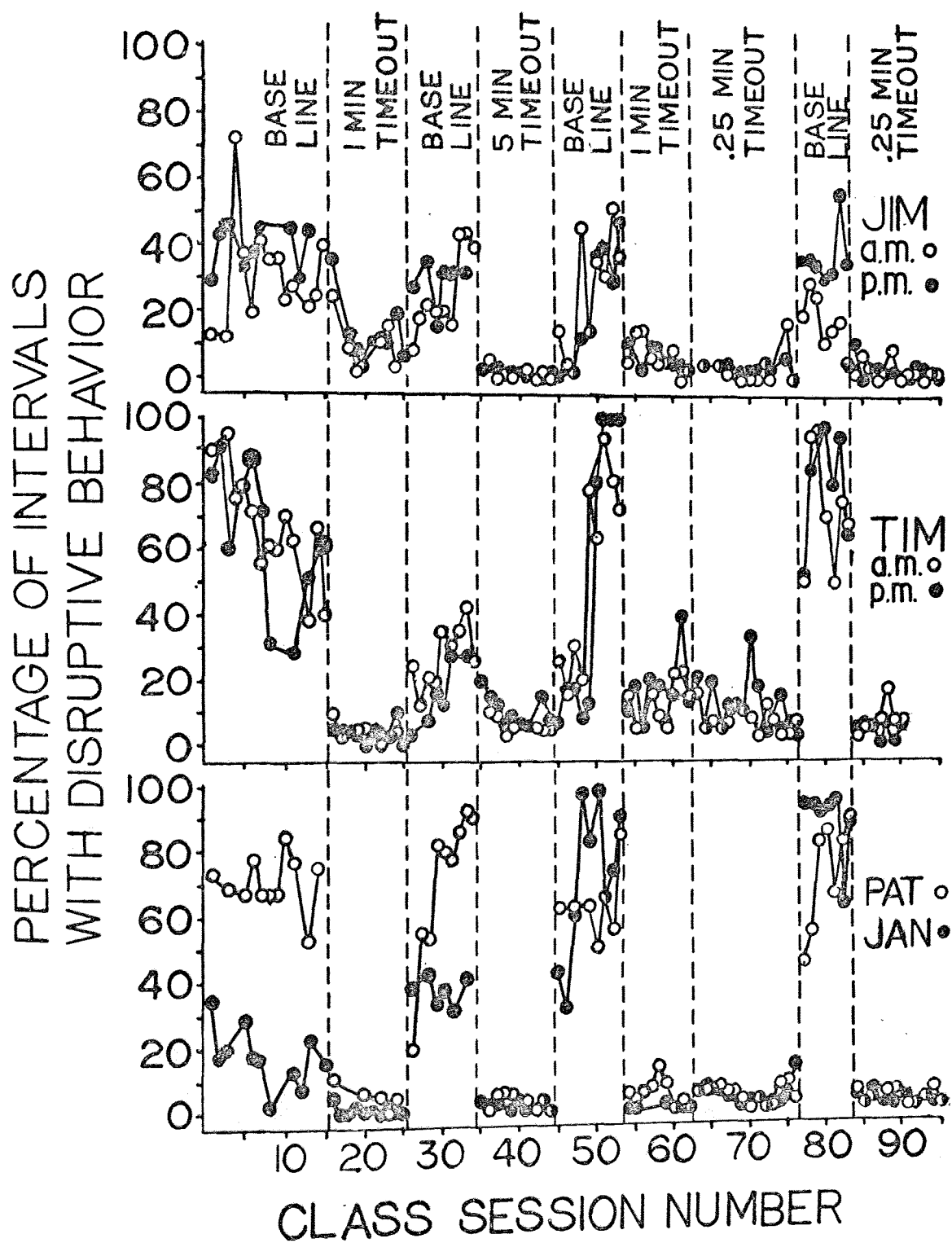


Figure 1. Percentage of intervals scored for disruptive behavior across the five conditions for each session (a.m. and p.m.) and subject.

behavior (sessions 1-15) ranged from 12% to 72% with the mean approximating 35%. Disruptive behavior decreased during the initial 1 min timeout phase to approximately 10% and returned to pre-timeout percentages during the subsequent baseline phase. Disruptive behavior decelerated to near 0% throughout the 5 min condition and again reversed to pre-timeout levels during the following baseline period. During the second 1 min timeout disruptive behavior immediately decreased below 15% and continued decelerating to 5%. Disruptive behavior continued to decrease during the .25 min timeout to near 0% until the end of this condition (sessions 72-75) when it varied between 0% and 17%. Disruptive behavior increased initially during both a.m. and p.m. sessions of the following baseline phase. However, while disruptive behavior remained reasonably stable at approximately 35% during the p.m. sessions (closed circles) it decreased during the a.m. sessions (open circles) to less than 10%. During the second .25 min phase disruptive behavior decelerated to near 0% with occasional increases to 10%.

Tim's disruptive behavior, middle panel of Figure 1, decreased during the initial baseline from approximately 90% to less than 60%. During the initial 1 min timeout condition disruptive behavior approached 0% for the nine sessions. Only the last few sessions of the following baseline phase approximated the percentages of disruptive

behavior observed during the previous baseline period. During the 5 min timeout disruptive behavior again decreased to nearly 0%. This was followed by the third baseline with an increase to 100% during the final p.m. sessions and ranged from 66% to 94% during the a.m. Reinstatement of the 1 min timeout, sessions 54 to 62, resulted in a substantial decrease during both the a.m. and p.m. to the range of 5% to 22% except for session 61 at 39%. Imposition of the .25 min timeout led to gradually decreasing percentages approximating 0% followed by an increase to the range of 50% to 98% during the subsequent baseline phase. The second .25 min condition resulted in an immediate decrease approaching 0% followed by some increase during the a.m.

Pat's disruptive behavior (open circles) and Jan's off-task behavior (closed circles) are both presented in the bottom panel of Figure 1. For both children, timeout resulted in near 0% disruptive behavior during all timeout conditions. Jan's level of off-task behavior increased across each baseline period to the 90% range during the final baseline, sessions 77-83, while Pat's baseline pattern and percentage of intervals scored was similar for each baseline condition.

In summary Figure 1 shows similar percentages of disruptive behavior for the three timeout durations across all children with two exceptions. The exceptions were the initial 1 min timeout for Jim (top panel, sessions 16-25)

and the second 1 min timeout for Tim (middle panel, sessions 54-62). In both cases, slightly more disruptive behavior was scored than during the other timeout conditions. For three of the children (Jim, Pat, Jan), the disruptive behavior scored during the second 1 min timeout, sessions 54-62, was less than or equal to that during the initial 1 min condition. The exception was Tim whose disruptive behavior decelerated substantially during the second 1 min timeout condition but not to the low levels demonstrated with the first 1 min timeout.

Figure 2 shows the rate of instructions and reinforcement per min of estimated session time for each child and each class session during baseline and timeout conditions. Following some variability during the initial baseline and 1 min timeout phase, the instruction and reinforcement rates stabilized and remained reasonably constant for nearly all children throughout the remainder of the investigation. The exception to this was Tim's rate, the middle panel, during the 5 min condition (sessions 35-44). The rate of instructions to Tim during the p.m. sessions varied between .40 and .79 instructions per min.

A post-hoc analysis of the estimated percentage of session time during which each child was available for instruction was also conducted (i.e., the percentage of recording intervals not scored for disruptive behaviors or timeout). Figure 3 shows these availability estimates for

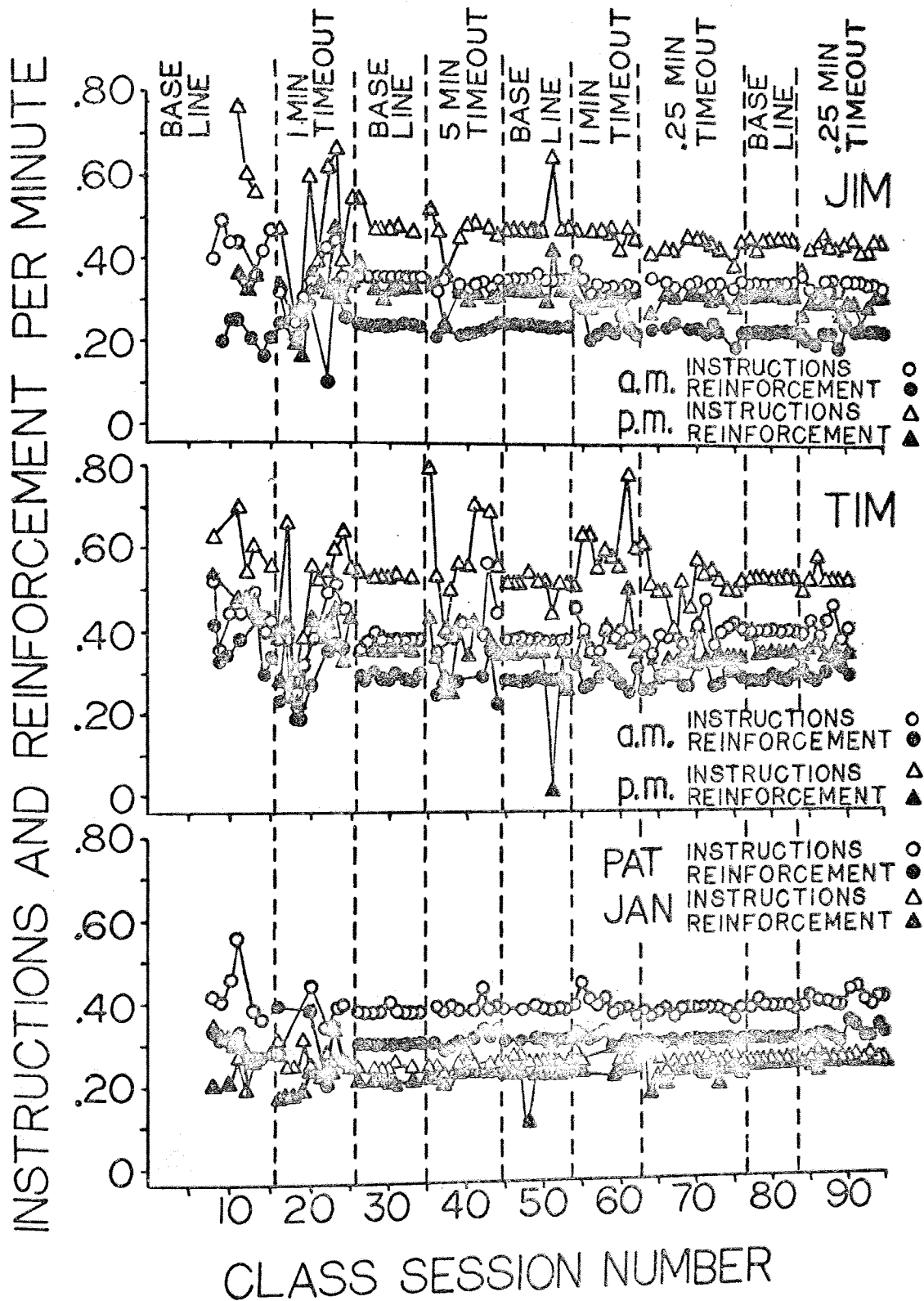


Figure 2. Number of instructions and reinforcement per min across the five conditions for each session (a.m. and p.m.) and subject.

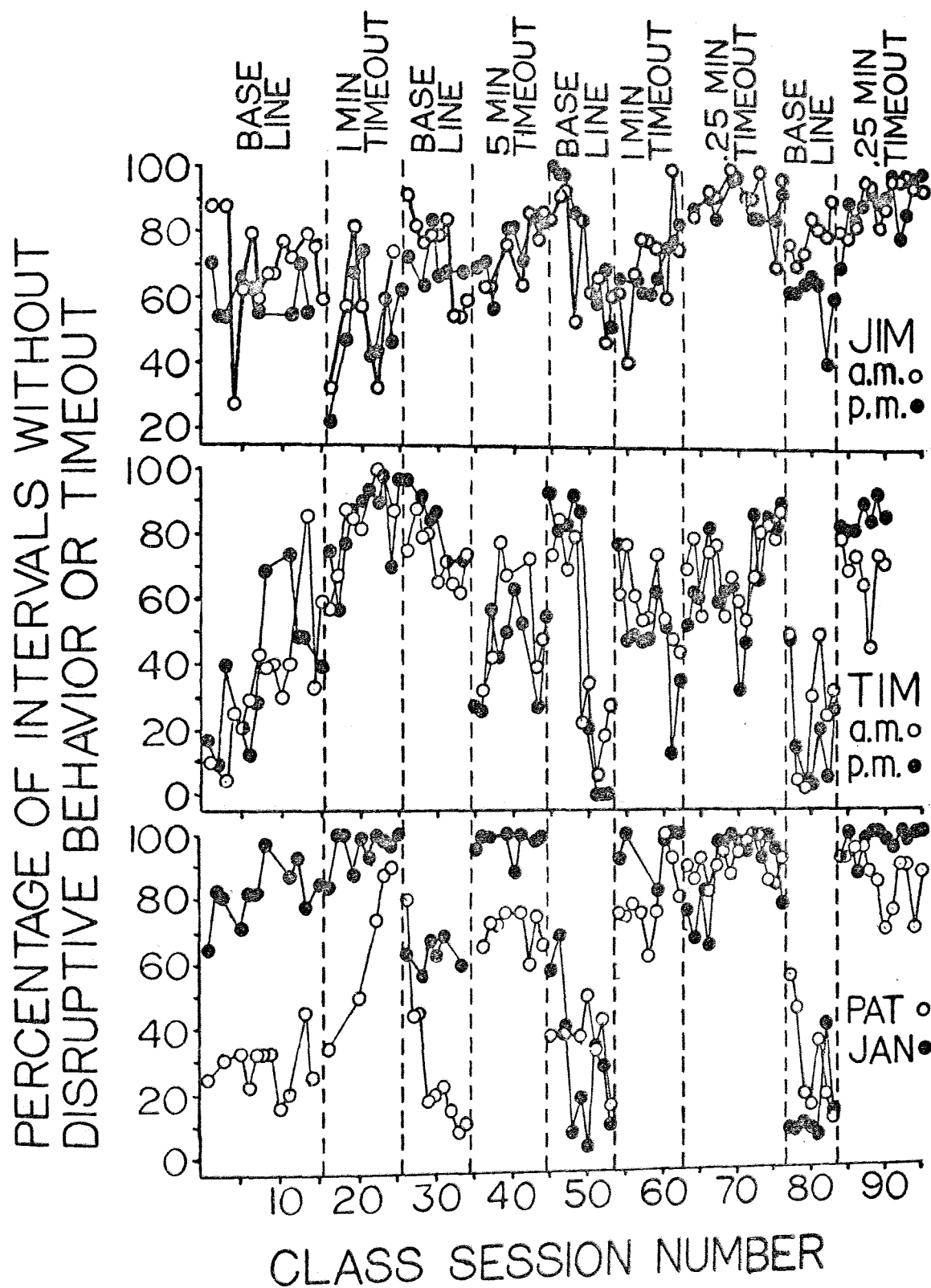


Figure 3. Percentage of intervals not scored for either disruptive behavior or timeout across the five conditions for each session (a.m. and p.m.) and subject.

each child and each class session during baseline and time-out conditions. In the top panel and considering both a.m. and p.m. sessions together, Jim was available for instruction approximately 64% of the time (range = 28%-88%) during the initial baseline period (sessions 1-15). Time available decreased slightly during the subsequent 1 min timeout to a mean of 54% and reversed to pre-timeout percentages during the following baseline phase. Time available increased steadily during the 5 min phase to nearly 90% and decreased to approximately 60% during the subsequent baseline period. Time available increased during the second 1 min condition to 80% and continued to increase across the .25 min timeout to above 90%. During the final baseline, sessions 77-83, the time available initially decreased for both a.m. and p.m. sessions, remained fairly stable at 60%-70% for the p.m., but increased to above 90% during the remainder of the a.m. sessions of this condition. The .25 min timeout resulted in 90% or more of the time available for the majority of these sessions with considerable variability during the p.m.

Tim's availability for instruction, middle panel of Figure 3, increased during the first baseline condition from approximately 10% to above 70% on two occasions. It further increased to above 90% with the 1 min timeout phase. During the subsequent baseline, time available decreased to approximately 70%. The 5 min timeout resulted in even less

time available (range = 25%-78%). The next baseline, sessions 45-53, led to an initial increase in time available followed by a sharp decrease to 0% for the final three p.m. sessions and 6% to 28% during these a.m. sessions. During the second 1 min timeout, time available immediately increased to 60%-80%, then decreased to 50% or lower. The .25 min condition resulted in a gradually increasing availability that just reached 90% before the substantial decrease during the final baseline condition. Reinstatement of the .25 min timeout increased time available to above 80% during the p.m. session and 70% during most of the a.m. sessions.

The percentage of intervals available for instruction for Jan and Pat are presented in the bottom panel of Figure 3. Jan remained available for instruction for 90% or more of the intervals during most sessions of all timeout conditions with declining percentages during the final three baseline conditions. During the initial baseline, Pat's time available remained reasonably stable at 30%. It increased to 90% during the initial 1 min phase and decreased to 10% during the subsequent baseline. The 5 min timeout resulted in an increase to 60% to 76% availability which was reversed during the next baseline and followed by a return to above 80% during the second 1 min timeout. Time available increased to approximately 90% during the .25 min period, then decreased to less than 20% during the

next baseline. The second .25 min phase resulted in an initial increase to above 90% but the data of the final eight sessions varied between 70% and 90%.

In summary Figure 3 shows that time available during the .25 min timeout phases was greater than during either the 5 min or 1 min conditions for Jim and Pat. Tim's availability for instruction during the .25 min phases was greater than during the 5 min and second 1 min timeouts, but not as great as during the initial 1 min timeout. Jan's time available for instruction remained the same across all timeout conditions. A percentage of time available for classroom instruction was computed across all four students and for all timeout condition class sessions. The mean percentage of time available during the .25 min timeout conditions was 14% greater than during the 5 min condition.

Chapter 4

DISCUSSION

The present results contribute to an extensive literature which shows that timeout procedures can suppress many classes of undesirable behavior (Johnston, 1972). With all four children timeout resulted in the near complete suppression of five disruptive classroom behaviors. The finding that all three durations of timeout, .25 min, 1 min, and 5 min, demonstrated similar rates of suppression was not expected. The original purpose of this study was to demonstrate a procedure for establishing the effectiveness of a short duration timeout after it was shown ineffective by replicating the sequence effects of the White et al. (1972) study. When the second presentation of the 1 min timeout did suppress the disruptive behavior in the present study rather than the facilitative results represented by White et al. it was contrasted with the .25 min timeout. This second attempt to produce a sequence effect similar to White et al. also failed. The effective suppression of disruptive classroom behavior with all three durations suggests that timeout duration may not be the critical parameter in determining the suppressiveness of timeout for this type of population and setting. These results also suggest that the current practice in many facilities of employing longer duration timeouts may be far more

restrictive than necessary.

A second difference in results between the present study and earlier attempts to investigate different durations of timeout (Burchard & Barrera, 1972; White et al., 1972) was that in both of the earlier studies the disruptive behaviors of several subjects were not suppressed by timeout. Timeout was effective in suppressing the disruptive behaviors of all subjects in the present study. Differences in procedure, population, and setting between the present study and the two earlier studies prohibit a direct comparison of the results. However, one important difference must be noted. Neither of the earlier studies either specified or attempted to control the rate of reinforcement for appropriate behaviors. Both the rates of reinforcement for appropriate behavior and teacher instructions were controlled in the present study and can be ruled out as contributing to the results. This is not the case with the two earlier studies.

The analysis of the time each student was available for classroom instruction during each baseline and timeout condition is novel in timeout research. The primary purpose of timeout procedures has been to decrease the frequency of undesirable behavior. However, any increase in students' time available for classroom instruction must be considered an important secondary gain of timeout programming while a decrease in availability for instruction would be a detriment

of any treatment procedure. The finding of 14% greater availability for instruction during the .25 min timeout periods relative to the 5 min period certainly merits further investigation. Also, Tim's availability for classroom instruction actually decreased during the 5 min condition, relative to the previous baseline.

In conclusion the present investigation suggests that very short duration timeout following a history of timeout can be as effective as longer durations and that the facilitation reported in a previous study does not always occur. The .25 min timeout duration did allow a considerably greater availability for instruction than the 5 min duration. Additional research is needed to isolate the most effective components of timeout as emphasized in this study. An interesting area of research concerns the effect of different rates of reinforcement for appropriate behavior on the suppressiveness of different durations of timeout. The comparison of different timeout procedures (i.e., a timeout chair vs. a timeout room) also merits further investigation.

REFERENCES

- Azrin, N. H., & Holz, W. C. Punishment. In W. K. Honig (Ed.), Operant behavior: areas of research and application. New York: Appleton-Century-Crofts, 1966.
- Bostow, D. E., & Bailey, J. B. Modification of severe disruptive and aggressive behavior using brief timeout and reinforcement procedures. Journal of Applied Behavior Analysis, 1969, 2, 31-37.
- Burchard, John D., & Barrera, Francisco. An analysis of timeout and response cost in a programmed environment. Journal of Applied Behavior Analysis, 1972, 5, 271-282.
- Burchard, J. D., & Tyler, V. O. Modification of delinquent behavior through operant conditioning. Behavior Research and Therapy, 1965, 2, 245-250.
- Clark, H. B., Rowbury, T., Baer, A. M., & Baer, D. M. Timeout as a punishing stimulus in continuous and intermittent schedules. Journal of Applied Behavior Analysis, 1973, 6, 443-455.
- Ferster, C. B., & Appel, J. B. Punishment of S^{Δ} responding in matching to sample by timeout from positive reinforcement. Journal of the Experimental Analysis of Behavior, 1961, 4, 45-56.
- Johnson, S. M., & Bolstad, O. D. Methodological issues in naturalistic observation: some problems and solutions in field research. In L. A. Hamerlynck, L. C. Handy, & E. J. Mash (Eds.), Behavior change: methodology, concepts, and practice. Champagne, Ill.: Research Press, 1973.
- Johnston, James M. Punishment of human behavior. American Psychologist. 1972, 27, 1033-1054.
- Martin, R. Legal challenges to behavior modification. Champagne, Ill.: Research Press, 1975.
- Miller, N. B., & Zimmerman, J. The effects of a pre-timeout stimulus on matching-to-sample of humans. Journal of the Experimental Analysis of Behavior, 1966, 9, 487.
- O'Leary, K. D., & O'Leary, S. G. Classroom management: the successful use of behavior modification. New York: Pergamon Press Inc., 1972.

- Pendergrass, V. E. Timeout from positive reinforcement following persistent, high rate behavior in retardates. Journal of Applied Behavior Analysis, 1972, 5, 85-91.
- Risley, T. R. Certify procedures not people. In W. S. Wood (Ed.), Issues in evaluating behavior modification. Champagne, Ill.: Research Press, 1975.
- Tate, B. G., & Baroff, G. S. Aversive control of self-injurious behavior in a psychotic boy. Behavior Research and Therapy, 1966, 4, 281-287.
- Tetreault, G., & Brubakken, D. Differential reinforcement and timeout procedures in the suppression of self-stimulation. Paper presented at the meeting of the Midwest Association of Behavior Analysis, Chicago, May 1976.
- Thomas, John A. Fixed-ratio punishment by timeout of concurrent variable-interval behavior. Journal of the Experimental Analysis of Behavior, 1968, 11, 609-616.
- Walker, H. M., Mattson, R. H., & Buckley, N. K. The functional analysis of behavior within an experimental class setting. In W. Becker (Ed.), An empirical basis for change in education. Chicago: Science Research Associates, 1971.
- White, G. D., Nielsen, G., & Johnson, S. M. Timeout duration and the suppression of deviant behavior in children. Journal of Applied Behavior Analysis, 1972, 5, 111-120.
- Zeilberger, J., Sampen, S. E., & Sloane, H. N. Modification of a child's problem behaviors in the home with the mother as therapist. Journal of Applied Behavior Analysis, 1968, 1, 47-53.
- Zimmerman, J., & Baydan, N. T. Punishment of S^{Δ} responding of humans in conditional matching to sample by timeout. Journal of the Experimental Analysis of Behavior, 1963, 6, 589-597.
- Zimmerman, J., & Ferster, C. B. Intermittent punishment of S^{Δ} responding in matching-to-sample. Journal of the Experimental Analysis of Behavior, 1963, 6, 349-356.